

NOT FOR PUBLICATION UNTIL RELEASED BY THE HOUSE
ARMED SERVICES COMMITTEE SUBCOMMITTEE ON
SEAPOWER AND PROJECTION FORCES

STATEMENT OF
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BEFORE THE
SUBCOMMITTEE ON SEAPOWER AND PROJECTION FORCES
OF THE
HOUSE ARMED SERVICES COMMITTEE

ON
OVERSIGHT OF U.S. NAVAL VESSEL ACQUISITION PROGRAMS AND FORCE
STRUCTURE OF THE DEPARTMENT OF THE NAVY IN THE FISCAL YEAR 2013
NATIONAL DEFENSE AUTHORIZATION BUDGET REQUEST

MARCH 29, 2012

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Chairman Akin, Ranking Member McIntyre, distinguished members of the Seapower and Projection Forces Subcommittee, thank you for inviting me to appear before you today to discuss what we at Huntington Ingalls Industries believe are the issues facing military shipbuilding today and how our nation's healthy but fragile shipbuilding industrial base can be sustained.

Huntington Ingalls Industries owns and operates two major shipbuilding divisions; Newport News Shipbuilding, of which I am the president, and Ingalls Shipbuilding in Pascagoula, MS, where my friend and colleague Irwin Edenzon is the president. Huntington Ingalls Industries also has a significant presence in Fleet support maintenance, commercial energy programs, and specialized work with the Department of Energy.

In July of 2009 and again in March 2010, our CEO, Mike Petters, who at the time was the president of the Northrop Grumman Shipbuilding Sector, was a witness before this committee on Improving Shipbuilding Efficiencies and The Impact on the Industrial Base of the Navy's 30 Year Shipbuilding Plan. During that panel, Mike discussed at some length what is needed for a healthy shipbuilding industry, the inherent inefficiencies introduced in only buying one ship of a class at a time, the risks associated with new technologies, and some suggestions for improvement in the overall process of procurement of naval vessels. With your permission, I will discuss the health of the industry, the cost of ships, and what we believe are obstacles to more affordable ships.

A Healthy but Fragile Shipbuilding Industry

We live in an era where freedom of global commerce on the seas is taken as a given. Certainly, there is minor piracy occurring off the Horn of Africa and a few other isolated areas, but there is no wholesale denial of freedom of maritime commerce anywhere on the globe. I suggest that the reason for that simple fact is the United States Navy. There is no other nation on earth with the comparable capability to continually forward deploy overwhelming naval power. Our country has benefitted from our Navy in ways that are far too numerous to elaborate today. Ninety to 95 percent of all imports and exports go by sea. The surface of the earth is 75 percent water, and approximately 80 percent of the population of the world lives within 100 miles of the sea. We are a maritime nation and the sea is our conduit to the rest of the world. Our Navy is the only force capable of maintaining that conduit.

The nation needs a strong Navy, and the Navy needs capable ships. Navy ships are truly statements of national purpose, and shipbuilding programs are unique in Department of Defense procurement programs. Building ships is unlike building anything else in the defense arsenal. We don't assemble ships, we fabricate and construct them. These are complex naval vessels such as nuclear-powered aircraft carriers, submarines and amphibious assault ships that take years to fabricate, erect, outfit, integrate, test and deliver. We literally start with flat steel plate, pipe, cable and supplier furnished components and, over the course of several years and with the efforts of thousands of extraordinarily talented shipbuilders, we deliver ships to the U.S. Navy unmatched in capability -- ships that will sail the seas and serve our nation's interests for 30 to 50 years. There is an equally talented supply base that provides raw materials, components and sub-systems that are integrated into the ship fabrication process to form these mighty vessels.

Clearly then, it is essential for the nation to maintain a healthy shipbuilding industrial base. The laws of economics are as applicable to shipbuilding as they are to any other industry. As the demand for Navy ships has decreased, so too, has the supply of critical resources essential to building those ships -- achieving an equilibrium that I would submit is adequate if the nation's future as the world's preeminent

maritime power does not require an ability to rapidly surge the construction of modern warships. Unfortunately, it is doubtful that the supplier base could quickly surge to supply the raw material and equipment necessary, and given the unique skills required, the numbers of capable and experienced men and women to rapidly increase production may simply not be available. Newport News Shipbuilding once had close to 30,000 workers; today we employ just over 20,000. Ingalls Shipbuilding also has a much smaller workforce than it did during the peak of naval construction in the 1980s. We are sizing ourselves today to support the Navy's shipbuilding plan, but I would submit that the potential of sequestration has made an assessment of health to some extent speculative. Without being overly speculative, I would characterize today's shipbuilding industrial base as essentially healthy but fragile, requiring action to prevent sequestration and the potentially devastating impact to shipbuilding and its industrial base.

At Huntington Ingalls Industries, we consider a healthy industry to be one that is able to attract the talent, capital and technology necessary to meet its commitments and to maintain and grow the business. This definition goes beyond a simple calculation of infrastructure capabilities. The shipyards in this country compete with all other businesses in the capital and labor markets. To stay healthy in the long run, we must demonstrate the ability to return value on investment and offer an acceptable balance of risk and reward. I believe that we must continue to use creative incentives for capital expenditures critical to both maintaining and improving the efficiency of the shipbuilding industrial base. The Virginia-Class Submarine Program has proven itself to be of immense value in this regard.

We also compete for talent in the marketplace, just as we must compete for capital. To attract the best and the brightest, we as an industry must be able to make a career as a shipbuilder attractive. The skills required are many and varied, and mastery does not occur overnight. We have master craftsmen who are machinists, electricians, welders, pipe-fitters, crane operators, fabricators, and a host of other technical skills. We also employ naval architects, structural engineers, designers, test engineers, and a variety of other professionals. We have about a thousand employees who have worked at our shipyards continuously for over 40 years - Master Shipbuilders who are now mentoring a new generation of shipbuilders. There are also shipbuilders who decide not to make shipbuilding their career, and who bring the skills they have acquired in the shipyard into the local community and to commercial enterprises. A repair technician repairing an industrial process water chiller plant may very well have learned his or her technical skills at one of our shipyards.

But the industrial base that builds the complex warships for America is made up of much more than shipyards. We rely on our suppliers for equipment and raw material necessary for ship construction. In fact, at Huntington Ingalls Industries we have about 4,000 suppliers across all 50 states. In many ways, our suppliers are more vulnerable to the changes in the shipbuilding plan and budget than are the large shipyards. In the budget request for fiscal year 2013, the Navy has reduced the number of ships procured in the next five years by 16. Just as we do, our suppliers rely on the Navy and Coast Guard projections in order to invest in people and infrastructure required to support those plans. When those plans change or acquisition timelines are altered due to budgetary constraints, those businesses are potentially left with bearing the costs of investment without the return earned on contracts that are either awarded at a later point in time or worse, never. We are finding that many in the supply base have decided that it is no longer in their economic best interests to participate in this marketplace. The suppliers have the same business reality that we face - they must attract talent, capital, and technology. As I said earlier, the laws of economics are unforgiving. When suppliers determine that they can no longer rely on future work, or conclude that the regulatory and contractual environment is unavailing of profitable contracts, they must adapt and turn to other opportunities.

The Cost of Ships

As with the health of the shipbuilding industrial base, much as been said and published concerning the rising costs of military ships. The reasons for increasing costs of ship construction are quite complex and overlaid with many variables. Permit me to try and explain some of them.

There are a number of ways to estimate the cost of ships. These range from simple analysis of historical costs and application of learning curves and escalation factors to the use of sophisticated parametric models for concepts yet to be built. All require certain assumptions to be made to include:

- Future economic conditions (such as escalation and cost of capital)
- The ability to attract and retain human resources (such as available skills, wages and fringes, health care costs)
- The availability of commodities and engineered components (diminishing manufacturing sources)
- Potential regulatory changes, technology changes (and the need to incorporate such changes during construction),
- Stability of the acquisition plan (to predict business base and the absorption of fixed overhead costs)

To the extent that these assumptions are realistic and applied in an unbiased manner, an estimate of future ship costs, within the limits of estimating variability, is reasonably practical.

We have found that straightforward cost estimating relationships such as historical dollars per ton of light ship displacement have merit, but as the complexity of vessels increases, reliance on historical trends or a simple dollars-to-weight relationship becomes less meaningful and can lead to significant variance between estimate and outcome. Indeed, as vessels become more complex, factors such as weight are becoming less meaningful than other factors such as feet of cable, microelectronic content, power density, air conditioning capacity, fiber optics and distributed systems.

This complexity is not limited to cost estimating relationships. The insertion of new technologies in modern warships has fundamentally altered the manner in which ships are constructed. Such new technologies are not “plug and play” upgrades to existing systems. Rather, the availability of these technologies and their incorporation into our warships has in many cases fundamentally changed the underlying philosophy of new ship designs. For example, the reduction in overall operating costs through reduction in crew size has been a priority in new ship designs, which drives increased automation of ship systems. Tasks which once required the manual operation of a ship’s valve can now be accomplished remotely with the simple activation of a switch, which in turn entails a motor operator, an electrical controller, sensors and cabling. New ship designs incorporate many more miles of cable, both electrical and fiber optic, to monitor ship condition and to operate systems. For example, the amount of cable has increased more than 200 percent between USS ABRAHAM LINCOLN (CVN 72) and GERALD R. FORD (CVN78). This makes today’s ships vastly more complex to construct, integrate, test and deliver. To the extent that the estimating and budgeting processes rely upon obsolete cost estimating relationships, unrealistic assumptions of future conditions, and simple historical data, we will significantly underestimate (and by extension, budget for) today’s much more complex designs.

I should also mention the “should cost” analysis, as it has become prominent in discussions of rising ship costs, particularly in providing a basis to establish budgets for future ship construction. Under Department of Defense guidelines, “should cost” program estimates are developed by a multi-functional

team of government contracting, contract administration, pricing, audit and engineering representatives. They differ from traditional evaluation methods because they do not assume that a contractor's historical costs reflect efficient and economical operation. The value of a "should cost" estimate is that it may identify areas for improvement in contractor operations that can yield real savings. The difficulty of such analysis is that it may quantify a theoretically possible but realistically improbable outcome – potentially resulting in unrealistic estimates, budgets and ultimately, unachievable contract targets.

A more realistic (and holistic) approach would give consideration to the definable variables and to the "known unknowns," such as:

- The number of ships in the class
- Similarity to other ships of known design and cost
- The planned interval for construction starts
- The construction span time
- The "base design" and any changes thereto
- Incorporation of new, undeveloped or untested technologies
- Technical complexity
- Contracting strategy (e.g., multi-ship or multi-year to leverage economic order quantities)
- Funding profile (i.e., is the profile sufficient for the shipbuilder to optimally plan and execute work)
- Inspection, test and acceptance requirements
- Economic environment
- Availability of manufacturing sources

All these factors contribute to the cost of ships, and while there are no easy answers for reducing costs, realistic budgets, disciplined control of requirements creep, stabilization of the shipbuilding plan and close coordination between the shipbuilders and the customer to ensure efficient and optimized construction are essential prerequisites.

Lead Ship Costs

The cost of a lead ship of a class historically may be 20 percent or more than budget, largely attributable to "unknowns" and unanticipated events that drive cost (or schedule, which translates into cost) as well as resulting from the peculiarities of the acquisition process, where estimates and budgets are established in advance of firm requirements. This is not an indictment of the process. It is, however, recognition that, given the pace of technological change, and the need to assure that technologies are incorporated to address current threats, discontinuities between budgets and actual outcomes may be to some extent unavoidable. This is particularly true when technologies are deployed for the first time. Certainly, the history of cost growth on lead ships of a class, going back for decades, would suggest this to be true.

At our Ingalls shipyard in Mississippi, we build Amphibious Assault Ships, the large helicopter/VSTOL vessels which are the centerpiece of the Navy/Marine Corps Amphibious Ready Group or ARG. Those ships, termed LHAs, have been built on essentially the same hull form since the beginning of the class in 1985. Yet even though the ships may look the same from the outside, they are radically different inside. The ships we are building today are orders of magnitude more complex and more capable than the ships

built even a decade ago. This significant increase in complexity involving increased labor, more engineering, greater detailed planning, and significantly more testing to deliver a ship increases cost.

Program Interruptions and delays

While delaying construction start, changing construction start centers or changing the quantity of vessels may result in decreased funding demands for any given fiscal year, overall costs will increase as a result of suboptimizing execution of the program. For example, construction of aircraft carriers on four year construction start centers will align the supplier base to plan production of a ship-set of equipment and material every four years. Subsequently changing to five or six year centers interrupts the entire supply chain, causes repricing to reflect changes in overhead absorption, disruption, escalation, and planning, and may result in significant inefficiencies. The reduction in build rate of Virginia-class submarines and DDG 51-class destroyers in FY 2014 is another example of program interruptions that have impacts to both the shipbuilder and the industrial base. Every class of ship has a unique timing and sequence of fabrication and construction. The realities of budgeting and funding to an optimal plan may not be achievable, but the effects of stretching or gapping a program are also realities that cannot be ignored in assessing cost growth.

Alternative Procurement Methods

In 2009 and 2010, when Mike Petters testified before this subcommittee, he discussed the inefficiencies inherent in the way the government procures ships. I would like to review those arguments because they are as relevant today, perhaps even more so, as they were then.

Using the “one ship at a time, fully funded” method of acquisition is economically inefficient. Fortunately, in recent years we have seen a greater use of multi-year procurements for submarines and destroyers and, most recently, the block-buy contracts for the Littoral Combat Ships. These types of contracts enable greater economic efficiency by first enabling the shipbuilder to purchase material and equipment in quantity for a number of ships instead of a single ship set; second, by stabilizing the shipyard labor force and enabling the deployment of craftsmen to realize learning curve improvement; and third (and perhaps most importantly) to provide the shipbuilder and industrial base with a stable, relatively long-term business base over which investments in process and infrastructure improvements can be justified.

For example, a shipbuilder who has a multi-year contract for 10 ships might very well invest in substantial improvements such as a new crane or a new cutting machine if the return on investment is calculated over those 10 ships. Such investments would not be justified were the returns to be calculated on a single ship. This is clearly an advantage that the large Asian shipyards, with large order books and backlog, have over our domestic shipbuilding industry. Huntington Ingalls encourages the Congress to make broadest use of multi-year contracts and block buy contracts, as we believe that they result in a lower overall cost to the taxpayer.

At Huntington Ingalls we measure ourselves against four fundamental standards of Safety, Quality, Cost, and Schedule. All are interrelated and all are ingrained in our culture. What we do in the service of our nation is unique, complicated, capital intensive, and very, very difficult. Simply stated, our business is hard stuff, done right.

In closing, I would like to report that American manufacturing is alive and well in shipbuilding. It's alive in our shipyards and in our nearly 4,000 supplier companies across all 50 states. Together, we are building the finest ships the Navy has ever sailed. There are challenges ahead, yet I believe they can be managed with smart procurement policies, a strong focus on our people and their skills, and an investment in technology.

This is the best approach for the industry, for the Navy and for America.

Thank you and I look forward to any questions you may have.